

## Small Clauses and To-Infinitival Clauses

著者	Miyagawa Keiko
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## Small Clauses and To-Infinitival Clauses\*

Keiko Miyagawa

### 0. Introduction

In this paper, we will be concerned with constructions called "small clauses", exemplified by such English examples as those in (1):

- (1) a. I consider *John foolish*.
- b. I consider *John a friend*.
- c. I consider *Bill known to everyone*.

In the following discussion, I will argue, following Stowell (1981), Chomsky (1981) and others, that each of the italicized phrases in (1) constitutes a constituent and show that the category of the constituent is an IP headed by INFL in parallel with the Exceptional Case Marking (ECM) constructions presented in (2):

- (2) a. I consider *John to be foolish*.
- b. I consider *John to be a friend*.
- c. I consider *Bill to be known to everyone*.

However, small clauses are different from ECM constructions with respect to extraction from their subjects; this difference is shown to be explained by revising the notion of L-marking proposed by Chomsky (1986a).

This paper is organized as follows. In section 1, I will show that it is plausible to assume that a small clause is a constituent and its category is an IP, introducing some previous discussions in the literature. In section 2, I will propose a revised definition of L-marking to explain the difference in extractability from subjects between small clauses and ECM constructions. In the final section, it will be shown that our IP-Analysis has some implications for other phenomena concerning subject small clauses, Case-marking, and the distribution of PRO in small clauses, which can be well explained under the analysis presented here.

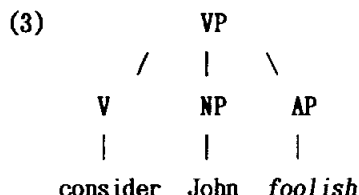
## 1. IP-Analysis

In this section, I will claim that a small clause is a constituent and its category is an IP by introducing some data from other recent studies and giving some new data which will provide motivation for the IP-analysis.

### 1.1. Constituency

Williams (1983) argues that the so-called small clauses are not constituents; according to him, the VP part of sentence (1a) has such a flat structure as (3):

- (1) a. I consider *John foolish*.



His point is that the thematic relation between *John* and *foolish* here should be expressed by his "predication" theory; hence it is not necessary to assume that these phrases constitute a constituent.

However, there are some examples which show that a small clause should be treated as a constituent. First, consider the following examples:

- (4) a. John considered *the men angry at each other*.  
       b. \*The men considered *John angry at each other*. (Safir (1983))
- (5) a. Mary considers *Bill kind to himself*.  
       b. \*Mary considers *Bill kind to herself*.

Safir (1983) claims that in (4b) the matrix subject *the men* cannot be the antecedent of *each other* because the small clause subject *John* intervenes, whereas *the men* is accessible to *each other* in (4a). The same is true in (5): *Mary* cannot be the antecedent of *herself*, because *Bill* intervenes. If we assume that a reflexive must be bound in its opaque domain determined

binding-theoretically and that an opaque domain is a constituent, then the italicized part in (4) and (5) must be a constituent because it creates an opaque domain.<sup>1</sup> On the other hand, if we assumed a small clause to be a nonconstituent, as Williams claims, we would need some other explanation for these phenomena; if (4b) and (5b) had the same flat structures as (6), they would be acceptable:

- (6) a. *The men* told John about *each other*.  
 b. *Mary* told Bill about *herself*.

So it is necessary to treat a small clause as a constituent.

Furthermore, according to Safir (1983), there is another fact that strongly supports the small-clause analysis. Consider the examples below:

- (7) a. *Workers angry about the pay* is just the sort of situation that the ad campaign was designed to avoid.  
 b. *Workers angry about the pay* does indeed seem to be just the sort of situation that the ad campaign was designed to avoid.

Safir (ibid.)

As singular agreement in (7) indicates, *Workers angry about the pay* is construed as describing a situation and it is the subject of the root sentence. Given that the small clause has a clausal interpretation and that only a constituent may occur in the subject position as widely accepted (cf. Stowell (1981)), it should be a constituent.<sup>2</sup>

Furthermore, the subject *Workers angry about the pay* is considered to be raised from the subject position of the clausal complement of *seem*. Given the fact that only constituents can be moved, the availability of the movement in (7b) also supports the claim that a small clause is a constituent, as Yukio Hirose (personal communication) pointed out to me.

## 1.2. Clausality

As we saw in the subsection above, it is plausible to conclude that a small clause is a constituent. Now the next question is what its category is. It has been widely accepted that the category of a small clause is a projection

of the lexical category that is the head of the predicate in the small clause (cf. Chomsky (1981, 1986a), Stowell (1981, 1983, 1987a, 1987b), and others). Here we will examine only Chomsky's analysis and show that it is not adequate.<sup>3</sup> Then I will propose an alternative analysis where a small clause is an IP headed by INFL in parallel with Exceptional Case Marking (ECM) constructions.

Chomsky (1986a) proposes that the subject of a small clause is generated in the position adjoined to the predicate in the small clause as in (8):

- (8) They consider [<sub>AP</sub>\* John [<sub>AP</sub> intelligent]]

He claims that in this structure *John* is the subject of the small clause, receiving its  $\theta$ -role from the AP "head" of AP\*, and that *consider* Case-marks *John*, since AP\* is not a barrier for government under his theory. This analysis seems to be sufficient to explain several facts about small clauses, but it fails to deal with some important facts about them. One of them is that an expletive *it* can occur in the subject position of a small clause just as it can in the subject position in an ordinary clause. Compare the examples in (9) and (10):

- (9) a. I consider *\*(it)* obvious that he is lying. (Stowell (1982))  
       b. I consider *\*(it)* unlikely that he will win. (Kitagawa (1985))  
 (10) a. *\*(It)* is obvious that he is lying.  
       b. *\*(It)* is unlikely that he will win.

Under the predicate phrase analysis as seen in (8), one could extend the Extended Projection Principle (EPP), proposed in Chomsky (1981),<sup>4</sup> from IP to small clauses; that is, to AP, PP and NP. As Kitagawa (1985) claims, this approach would not be sufficient because NPs do not allow pleonastics as illustrated in (11):

- (11) a. *\*its* hotness (with pleonastic reading)  
       b. *\*its* unlikelyness that he will win

Since NP can be predicate in small clauses, it would be subject to the EPP. It is not true, however, as seen in (11).

Furthermore, *it* can appear in the embedded subject position of ECM constructions as in (12):

- (12) a. I consider *\*(it)* to be obvious that he is lying. (Stowell (1982))  
 b. I consider *\*(it)* to be unlikely that he will win.

Given that expletive *it* can and must occur in the subject position in (10) and (12), which is required by the EPP, our IP-analysis can explain in the same way the grammaticality and ungrammaticality of the examples in (9) without any stipulation. So, it is plausible that the *it*'s in (9), (10) and (12) appear in the same structural position, that is, the SPEC-position of IP. In other words, embedded clauses of ECM constructions and small clauses are IPs.

Another argument for the IP-analysis is concerned with agreement between subjects and predicates in small clauses. Consider the following French example:

- (13) Je les sais méchants.<sup>5</sup>  
 I them know hostile

It seems that the verb *sais* takes the small clause complement *les méchants*, though the subject of the small clause *les* is cliticized onto some preverbal position. So the S-structure of (13) should be the one in (14), where the trace of the cliticized *les* is left in the subject position:

- (14) Je les<sub>i</sub> sais [<sub>t<sub>i</sub></sub> méchants]

What is important here is that the adjective *méchants* agrees with the subject *les*...<sub>t<sub>i</sub></sub> with respect to number and gender, as clearly indicated by the inflection of the adjective (that is, -s is the plural inflection morpheme and there is no female inflection morpheme *e* in this case). If we assume that all such kinds of agreement are held by the agreement feature under INFL, then small clauses should contain INFL; in other words, the category of a small clause is an IP.<sup>6,7</sup> It cannot be a CP, like ECM constructions, because if so, the embedded subject in each construction would not be Case-marked by the main verb, since the CP blocks the government of the subject by the verb under

Chomsky's (1986a) theory.<sup>8</sup>

In the following sections, I will present other phenomena about small clauses which can be explained by the IP-analysis proposed here.

## 2. Subject Condition Effect

We have seen that it is natural to treat small clauses as IPs in parallel with ECM constructions. In other words, the category of a small clause is the same as that of the embedded clause of an ECM construction, that is, an IP. If so, it might be expected that both of the constructions behave syntactically in exactly the same way. But actually they do not. In this section we will consider a difference between these two constructions with respect to the extraction operation. Then we will seek an explanation of the unexpected discrepancy under our IP-analysis with some revision of L-marking proposed in Chomsky (1986a).

First, consider the following examples:

- (15) a. Who<sub>i</sub> did you buy a picture of t<sub>i</sub> ?  
 b. ?\*Who<sub>i</sub> did a picture of t<sub>i</sub> surprise you?

In (15a), the *wh*-phrase is extracted from the object NP; and in (15b), it is extracted from the subject NP. The ungrammaticality of the latter sentence is due to the so-called "Subject Condition", which roughly says that no element in a subject can be extracted. Chomsky (1986a) claims that this effect can be reduced to the Subjacency Condition under his Barriers framework. Now I will first introduce his explanation of this asymmetry, and then we will consider an asymmetry between small clause constructions and ECM constructions.

In his framework, Chomsky defines the notions of barrier, L-marking and the Subjacency Condition as follows:

- (16) a.  $\gamma$  is a blocking category (BC) for  $\beta$  iff  $\gamma$  is not L-marked and  $\gamma$  dominates  $\beta$ .  
 b.  $\gamma$  is a barrier for  $\beta$  iff (i) or (ii):  
     (i)  $\gamma$  immediately dominates  $\delta$ ,  $\delta$  a BC for  $\beta$ ;  
     (ii)  $\gamma$  is a BC for  $\beta$ ,  $\gamma \neq \text{IP}$ .

- (17) a.  $\alpha$  L-marks  $\beta$  iff  $\alpha$  is a lexical category that  $\theta$ -governs  $\beta$ .  
 b.  $\alpha$   $\theta$ -governs  $\beta$  iff  $\alpha$  zero-level category that  $\theta$ -marks  $\beta$ , and  $\alpha$ ,  $\beta$  are sisters.
- (18) a. The Subjacency Condition:  
 If  $(\alpha_i, \alpha_{i+1})$  is a link of a chain, then  $\alpha_{i+1}$  is 0- or 1-subjacent to  $\alpha_i$ .  
 b.  $\beta$  is n-subjacent to  $\alpha$  iff there are fewer than  $n+1$  barriers for  $\beta$  that exclude  $\alpha$ .

Chomsky's explanation of the sentences in (15) is as follows. Their S-structure representations are as in (19):

- (19) a. [<sub>CP</sub>Who<sub>i</sub> did [<sub>IP</sub>you buy [<sub>NP</sub>a picture of t<sub>i</sub>]]];  
 b. [<sub>CP</sub>Who<sub>i</sub> did [<sub>IP</sub>[<sub>NP</sub>a picture of t<sub>i</sub>] surprise you]]

In (19a) there are no barriers between the *wh*-phrase and its trace; the object NP is not a barrier, because it is L-marked by the preceding verb, and hence the movement does not violate the Subjacency Condition. On the other hand, in (19b) the subject NP is a barrier because it is not L-marked, and the IP dominating it inherits the barrierhood. So there is more than one barrier between *who* and t<sub>i</sub> in (19b), which causes a violation of the Subjacency Condition.

Now compare (19a) and the following examples cited from Stowell (1987a):

- (20) a. \*Who do you believe [[<sub>NP</sub>the oldest sister of t] to have left]?  
 b. ?\*Who do you consider [[<sub>NP</sub>the oldest sister of t] foolish]?

In (19a) the *wh*-phrase is extracted from the object NP of the verb *buy* and the sentence is grammatical. In (20a) and (20b) on the other hand, the NP is the subject of the embedded clause, since we assume that a small clause and a clause embedded in an ECM construction are both IPs, and the sentences are worse than (19a). This grammatical contrast between (19a) and (20a, b) would be explained in the same way as in (19a, b) under Chomsky's framework introduced above, (although the contrast between (20a) and (20b) could not be explained, which we will deal with soon below). Consider the S-structures of



(20a) and (20b) indicated in (21):

- (21) a. [<sub>CP</sub>who do [<sub>IP</sub>you [<sub>VP</sub>t' [<sub>VP</sub>believe [<sub>IP</sub>[<sub>NP</sub>the oldest sister of t]  
to have left]]]]]  
b. [<sub>CP</sub>who do [<sub>IP</sub>you [<sub>VP</sub>t' [<sub>VP</sub>consider [<sub>IP</sub>[<sub>NP</sub>the oldest sister of t]  
foolish]]]]]

Here in each of the constructions, there are two barriers between the original trace *t* and the intermediate trace *t'*: the NP that is not L-marked and the lower IP that inherits the barrierhood. Therefore the sentences violate the Subjacency Condition. We will call the violation of crossing more than one barrier as in (21) a strong violation of Subjacency. Now it is important to note that this is not a sufficient explanation because the difference of the acceptability between (20a) and (20b) will remain unexplained; the latter is better than the former. Rapoport (1987) also points out the same contrast, giving the following examples, which show the difference more clearly:

- (22) a. \*Who do you consider [[stories about *t*] to be funny]?  
b. ?Who do you consider [[stories about *t*] funny]?

If these judgements are correct, we must provide an additional explanation of the phenomena under discussion.<sup>9</sup>

Now I will propose a way to explain the fact above with a revision of L-marking assumed by Chomsky, which is defined as in (23):

- (23)  $\alpha$  L-marks  $\beta$  iff (i) or (ii):  
(i)  $\alpha$  is a lexical category that  $\theta$ -governs  $\beta$ .  
(ii)  $\alpha$  is a lexical category that  $\theta$ -governs  $\gamma$  that immediately dominates  $\beta$ , and  $\gamma$  agrees with  $\beta$ .

The difference between L-marking in (23) and Chomsky's L-marking in (17a) is that the definition in the former involves agreement as well as  $\theta$ -government.<sup>10</sup> And we maintain Chomsky's definition of barrier, repeated here as (24):

- (24) a.  $\gamma$  is a blocking category (BC) for  $\beta$  iff  $\gamma$  is not L-marked and  $\gamma$  dominates  $\beta$ .  
 b.  $\gamma$  is a barrier for  $\beta$  iff (i) or (ii):  
     (i)  $\gamma$  immediately dominates  $\beta$ ,  $\beta$  a BC for  $\beta$ ;  
     (ii)  $\gamma$  is a BC for  $\beta$ ,  $\gamma \neq \text{IP}$ .

Let us further make an assumption about agreement:

- (25) A maximal projection XP and its head X can agree; in other words, they can have the same agreement features, iff X does not have intrinsic agreement features.

In (25), "agreement features" involves features given by means of  $\theta$ -government, and we will represent these features by indices. Here consider the abstract structures in (26);

- (26) a.  $[_{XP} YP_i [_{X'} \dots X_i \dots]]$   
       b.  $X_i [_{VP_i} ZP [_{V'} \dots Y_i \dots]]$

We assume here that in (26a) coindexing through SPEC-head agreement holds between the head X and YP in the SPEC position of XP (cf. Chomsky (1986a)), and that in (26b), X and YP are coindexed by means of  $\theta$ -government. Then if X and YP are coindexed in (26b), and Y does not have intrinsic agreement features, Y can agree with its maximal projection YP, according to (25). This index is shared with ZP through SPEC-head agreement, just as in (26a). So the final representation of (26b) will be (27):

- (27)  $X_i [_{VP_i} ZP_i [_{V'} \dots Y_i \dots]]$

In this construction YP and ZP agree, or in other words, they have the same index. Note that according to the definitions in (23), X L-marks YP, and at the same time, it L-marks ZP in (27).

This mechanism can be applied to the constructions of small clauses and ECM constructions as seen above. Consider again the examples in (21), repeated below:

- (21) a. [<sub>CP</sub>who do [<sub>IP</sub>you [<sub>VP</sub>' [<sub>VP</sub>believe [<sub>IP</sub>\*[<sub>NP</sub>the oldest sister of t] to  
have left]]]]]  
b. [<sub>CP</sub>who do [<sub>IP</sub>you [<sub>VP</sub>' [<sub>VP</sub>consider [<sub>IP</sub>\*[<sub>NP</sub>the oldest sister of t]  
foolish]]]]]

In each of the constructions, IP\* is L-marked by the preceding verb. But they are different from each other with respect to L-marking of the embedded subjects. Suppose that *to* in INFL has intrinsic agreement features, then in (21a), the head *I* cannot have the same index as that of IP, according to the definition in (25). That is, when SPEC-head agreement holds between the head *I* and the subject NP, the subject and the preceding verb *believe* are not coindexed, as indicated in (28):

- (28) believe<sub>i</sub> [<sub>IP</sub><sub>i</sub> [<sub>NP</sub><sub>j</sub> ] [<sub>I</sub>' to<sub>j</sub> [<sub>VP</sub> ]]]

So in (28) the verb *believe* cannot L-mark the subject NP. In (21b), on the other hand, if we assume that the INFL in small clauses does not have intrinsic agreement features at least in English, the head *I* can have the same index as that of IP. So, through the SPEC-head agreement between the subject NP and the head *I*, the NP and the preceding verb will be coindexed, as shown in (29):

- (29) consider<sub>i</sub> [<sub>IP</sub><sub>i</sub> [<sub>NP</sub><sub>i</sub> ] [<sub>I</sub>' I<sub>i</sub> [<sub>AP</sub> ]]]

Thus, it follows that in (29) the verb L-marks the subject NP.

This difference related to L-marking between small clauses and ECM constructions induces the difference in extractability from subjects that we saw in (21) and (22). More precisely, the extraction from the L-marked subjects as in (21b) is better than that from the subjects which are not L-marked as in (21a), under the assumption about English that the INFL in the ECM construction, which is realized as *to*, has intrinsic agreement features and the INFL in small clauses, which has no lexical realization, does not.<sup>11, 12</sup>

The variation of heads as to whether a head has intrinsic agreement features or not as seen above can also explain some phenomena other than small clauses. Consider the following examples cited from Lasnik and Saito

(forthcoming);<sup>13</sup>

- (30) a. ?\*Who<sub>i</sub> do you think [<sub>CP</sub>[C' that [[pictures of t<sub>i</sub>] are on sale]]]  
 b. ??Who<sub>i</sub> do you wonder [<sub>CP</sub>[<sub>NP</sub>which picture of t<sub>i</sub>]<sub>j</sub> [<sub>C'</sub> C[ t<sub>j</sub> is on sale]]]]?

Suppose that the complementizer *that* in (30a) has intrinsic agreement features and the null complementizer *C* in (30b) does not. Then the indexing of agreement in those structures is indicated as in (31):

- (31) a. think<sub>i</sub> [<sub>CP</sub><sub>i</sub>[C' that<sub>j</sub> [<sub>IP</sub>[<sub>NP</sub>k ] I<sub>k</sub> ]]]  
 b. wonder<sub>i</sub> [<sub>CP</sub><sub>i</sub>[<sub>NP</sub><sub>i</sub> ] [<sub>C'</sub> C<sub>i</sub> [<sub>IP</sub> ]]]

In (31a) the NP from which the *wh*-phrase is extracted is not L-marked and thus the sentence is ungrammatical. But in (31b) the NP from which the *wh*-phrase is extracted is L-marked, because the head *C* can have the same index of agreement as that of CP in the same way as in small clauses, and so, the sentence is better than (31a).<sup>14</sup>

The mechanism of agreement like this is developed by Rivero (1987) and Campos (1989) in the treatment of languages other than English. Rivero shows that in Modern Greek raising and passivization are possible from the subject position of a tensed clause, and that reflexives can occur in the subject position of a embedded clause, as in (32) and (33). Furthermore, he points out that Exceptional Case Marking is also possible when the embedded clause is finite as in (34):

- (32) a. I ánthropi<sub>i</sub> fénonte [<sub>CP</sub>[<sub>IP</sub>t<sub>i</sub> na dúlevon]]  
 the men<sub>i</sub> seem-3P1 [<sub>CP</sub>[<sub>IP</sub>t<sub>i</sub> work (Subj)]]  
 'The men seem to be working.'  
 b. Ta pediá<sub>i</sub> anaménonte [<sub>CP</sub>[<sub>IP</sub>t<sub>i</sub> na figun]]  
 the children<sub>i</sub> are expected [<sub>CP</sub>[<sub>IP</sub>t<sub>i</sub> go (Subj)]]  
 'The children are expected to go.'

- (33) 0 Giánnis<sub>i</sub> pistévi [<sub>CP</sub> oti [<sub>IP</sub>0 eaftós tu<sub>i</sub> íne filós **mu**]]  
 the Giánnis<sub>i</sub> believes [<sub>CP</sub>that [<sub>IP</sub> himself<sub>i</sub> is friend **my**]]  
 'Giánnis thinks that himself is my friend.'
- (34) I Giánnis théli [<sub>CP</sub> ti María na exetási tin kóri **mu**]  
 the Giánnis wants [<sub>CP</sub>the María-Acc examines the daughter **my-Acc**]  
 'Giánnis wants María to examine my daughter.'

According to Rivero, these are possible, because the main verb can govern the subject position though a CP intervenes between them. To explain these phenomena, he proposes a mechanism of indexing just like the one of agreement assumed above: in Modern Greek a complementizer is transparent for government whether it is overt or covert; see note 12. Consider the following abstract structure:

- (35) V<sub>i</sub> [<sub>CP</sub><sub>i</sub> [C' C<sub>i</sub> [<sub>IP</sub><sub>i</sub> [<sub>NP</sub><sub>i</sub> ] I<sub>i</sub> [<sub>I'</sub> ]]]]

In (35) V L-marks CP and thus they are coindexed. Since Cs are transparent in this language, the head C can have the same index as that of CP. Then C and I are coindexed by head-head agreement, and I and the subject NP in the SPEC-position are coindexed by SPEC-head agreement. So, in this representation, IP is L-marked by the main verb, and thus it is not a blocking category. Hence CP does not become a barrier by inheritance.

Furthermore, Campos (1989) supports Rivero's analysis by giving evidence concerning extraction of a *wh*-phrase from a *wh*-island in such a construction as in (35), and argues that the same phenomenon can be seen also in Spanish, which I will not discuss here.

Summarizing, under the IP-analysis of small clauses proposed here, we have given an explanation to the difference between small clauses and the ECM constructions concerning extractability from a subject of an embedded clause. And I have proposed a revised definition of L-marking and a mechanism of agreement. If we assumed other analyses about small clauses, another kind of explanation would be needed. But our IP-analysis can explain both of similarities (which we discussed in section 1) and differences between the two constructions.

### 3. Implications

In this section, we will consider some consequences of the IP-analysis concerned with the distribution of PRO and subject small clauses, and show that a small clause is always IP.

First, consider the following:

- (36) a. \*John considers [PRO intelligent].  
 b. \*John considers [PRO to be intelligent]

Under the IP-analysis of small clauses, we can easily predict the ungrammaticality of (36a) just in the same way as in ECM constructions as in (36b); that is, if we assume following Chomsky (1981) that PRO is ungoverned (the PRO theorem), the ungrammaticality of the sentences in (36) will be explained, since PROs in both constructions are governed by the main verbs. All such constructions where PRO appears in a small clause that is a complement of a ECM-verb as in (36a) will be explained in the same way.

Now let us consider other constructions as in (37):

- (37) a. it is [<sub>NPA</sub> shame [PRO to be bashful]].  
 b. \*it is [<sub>NPA</sub> shame [PRO bashful]]. (Williams (1983))

Both embedded clauses including PROs are complements to the preceding noun *shame*. If we assume that a small clause is always an IP and not a CP and that a to-infinitival clause can be a CP, we will have the structures as in (38):

- (38) a. it is [<sub>NPA</sub> shame [<sub>CP</sub>[<sub>IP</sub>PRO to be bashful]]].  
 b. \*it is [<sub>NPA</sub> shame [<sub>IP</sub>PRO bashful]].

In (38a) PRO is not governed by the NP head *shame* because CP is a barrier, and thus the sentence is grammatical. But in (38b) it is governed, since there are no barriers between the head N and PRO, and so the sentence is ungrammatical.

Next examples to be considered are constructions where a small clause appears in the subject position. They are different again from constructions where a to-infinitival clause appears in the subject position. The typical examples where a small clause appears in the subject position are those

examined above in (6), repeated here as (39):

- (39) a. [Workers angry about the pay] is just the sort of situation that  
the ad campaign was designed to avoid.  
b. [Workers angry about the pay] does indeed seem to be just the sort  
of situation that the ad campaign was designed to avoid.  
(Safir (1983))

Now observe the following examples:

- (40) a. [PRO to leave] would be fun.  
b. \*[PRO bashful] would be a shame. (Williams (1983))

Here again on the assumption that a small clause is an IP and a *to*-clause can be a CP, the structures of (40) will be as in (41):

- (41) a. [<sub>CP</sub>[<sub>IP</sub>PRO to leave]] would be fun.  
b. \* [<sub>IP</sub>PRO bashful] would be a shame.

Thus PRO in (41a) is not governed by the tensed INFL in the matrix clause because CP is a barrier. In (41b), on the other hand, PRO is governed since there exist no barriers between the tensed INFL and PRO. Note that this explanation needs to presuppose that small clauses in (41b) are in the SPEC of IP. The following observation will confirm this point.

According to Stowell (1981), sentential subjects must be extraposed because of the following principle proposed by him:

(42) The Case-Resistance Principle

Case may not be assigned to a category bearing a Case-assigning feature.

He argues that *that*-clauses and *to*-clauses have Case-assigning features and thus when they appear in subject positions, they must be extraposed to a position not governed by INFL, say, to the IP-adjoined position as in (43):

- (43) a. [<sub>IP</sub>[<sub>CP</sub>That Pauline moved to Kansas]<sub>i</sub> [<sub>IP</sub>t<sub>i</sub> surprised me].  
 b. [<sub>IP</sub>[<sub>CP</sub>(For you) to take this course]<sub>i</sub> [<sub>IP</sub>t<sub>i</sub> would help you].

If this is correct, and if a small clause also had a Case-assigning feature, then both of the embedded clauses in (41) would have to be extraposed as in (44):

- (44) a. [<sub>IP</sub>[<sub>CP</sub>[<sub>IP</sub>PRO to leave]]<sub>i</sub> [<sub>IP</sub>t<sub>i</sub> would be fun].  
 b. [<sub>IP</sub>[<sub>IP</sub>PRO bashful]]<sub>i</sub> [<sub>IP</sub>t<sub>i</sub> would be a shame].

Since the IP-adjoined position is not governed by the tensed INFL, PROs in both structures are not governed, and then (44b) should be grammatical contrary to the fact.

However there are examples which show that a small clause in the subject position as in (41b) is not extraposed. Before looking at those examples, let us consider the following:

- (45) a. ??The man [to whom]<sub>i</sub>[that book]<sub>j</sub>, I gave t<sub>j</sub> t<sub>i</sub>  
 b. ??How<sub>i</sub> do you think (that) [this problem]<sub>j</sub>, John solved t<sub>j</sub> t<sub>i</sub> ?  
 (Lasnik and Saito (forthcoming))

Lasnik and Saito observe that if a *wh*-phrase is extracted out of a domain in which another element is topicalized, the sentence becomes marginal (, if not ungrammatical). Takano (to appear) points out that the same effect can be observed in a construction which has a sentential subject as in (46):

- (46) a. Who do you believe that [John's visit to Mary] would bother t?  
 b. Who do you believe that [John's visiting Mary] would bother t?  
 c. ??Who do you believe that [for John to visit Mary] would bother t?

This is because in (46c) the sentential subject is extraposed just as in (45) where an element is extraposed by topicalization. Now consider the small clause examples in (47):



- (47) a. (?) [What kind of situation] do you think that [workers being angry about the pay] is t ?  
 b. (?) [What kind of situation] do you think that [workers angry about the pay] is t ?  
 c. ?? [What kind of situation] do you think that [for workers to be angry about the pay] would be t ?

What these examples indicate is that a small clause in the subject position is not extraposed, just like the gerund constructions in (46b) and (47a).

Now let us go back to the examples in (41) repeated here:

- (41) a. [<sub>CP</sub> [<sub>IP</sub> PRO to leave]] would be fun.  
 b. \* [<sub>IP</sub> PRO bashful] would be a shame.

The discussion above shows that a *to*-clause is extraposed, but a small clause is not. So, the S-structures of (41a) and (41b) are as follows:

- (48) a. [<sub>IP</sub> [<sub>CP</sub> [<sub>IP</sub> PRO to leave]]<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> would be fun]].  
 b. \* [<sub>IP</sub> [<sub>IP</sub> PRO bashful] would be a shame].

In (48b) if the small clause is an IP, PRO is governed by the tensed INFL as discussed earlier, and then the ungrammaticality of the sentence is predicted by the PRO theorem, which is reduced to principles independent of these phenomena.

Given that a subject small clause is not extraposed, we can also explain another difference between small clauses and *to*-clauses in subject positions concerning Case-assignment to the subjects in those clauses. Consider the following paradigm:

- (49) a. \*Workers to be angry about the pay is the situation to be avoided.  
 b. Workers angry about the pay is the situation to be avoided.

If the discussion above is correct, the structures of the sentences are as in (50):

- (50) a. \* $[_{IP}[_{CP}\text{Workers to be angry about the pay}]_i [_{IP} t_i \text{ is the situation to be avoided}]]$ .  
 b.  $[_{IP}[_{IP}\text{Workers angry about the pay}] \text{ is the situation to be avoided}]$

In (50a) since *Workers* is not governed by the tensed INFL, it is not Case-marked by it and the sentence is ungrammatical.<sup>15</sup> In (50b) on the other hand, *Workers* is governed and Case-marked by the tensed INFL and the sentence is grammatical. In this case, we assume as follows about the Case-marking: first, the tensed INFL assigns a nominative Case directly to the NP embedded in the subject small clause. Then the Case is shared with the whole subject IP, that is, the small clause itself, through such a mechanism of agreement as the one mentioned in section 2. If we further assume that a small clause must have Case when it is an argument, which is required by the so-called Visibility Condition,<sup>16</sup> the following example can be also explained:

- (51) \* $[[[_{PRO} \text{ sad}] \text{ to surprise Mary}] \text{ would be unfortunate}]$ .  
 (Williams (1983))

In (51) since the small clause embedded in the subject is an argument, it must be assigned Case. But the governor of the small clause is a nonfinite INFL, which is not a Case-assigner, and thus the sentence is ruled out. The ungrammaticality of such a sentence is not attributed to the PRO theorem, but to the Visibility Condition.

#### 4. Summary

I have shown that a small clause is a constituent, as many linguists claim, and proposed that its category is an IP. And I have claimed that certain facts concerning the difference between small clauses and the ECM constructions and the difference between small clauses and other *to*-infinitival clauses can be explained by our IP-analysis. There are many problems unexplained here about small clauses; for example, one about the quantifier scope (cf. Stowell (1987a), Kitagawa (1985) and others) and one about adjunct small clauses in the sense of Chomsky (1981). But they are far beyond the scope of this paper and we would like to leave the issues to further research.

## NOTES

\* This is a slightly modified version of the idea reported at the Tsukuba English Linguistics Colloquium held on October 22, 1989. I am grateful to the audience for useful comments. I am especially indebted to Yuji Takano, Toshifusa Oka, Shinsuke Homma and Shin Watanabe for their valuable comments and criticism. Special thanks go to Minoru Nakau, Shosuke Haraguchi and Yukio Hirose, who read the earlier version of this paper and pointed out some inadequacies involved. Finally, I would like to thank Nobuhiro Kaga, Masaharu Shimada, Kazue Takeda, Hidehito Hoshi and Rie Takeuchi for their insightful suggestions.

<sup>1</sup> Here we assume the binding theory proposed by Chomsky (1986b), presented below:

- (i) (A) an anaphor is bound in a local domain
- (B) a pronominal is free in a local domain
- (C) an r-expression is free (in the domain of the head of its chain)

Following him, we take the local domain for an anaphor  $\alpha$  to be the minimal governing category of  $\alpha$ , where a governing category is a maximal projection containing both a subject and a lexical category governing  $\alpha$ .

<sup>2</sup> Kubo (1989) claims that *Workers* is the head of the subject and that *angry about the pay* is an adjective phrase with attributive interpretation. However, there are some empirical arguments against this proposal, which I will not discuss here (for detailed discussion, see Oka (1989)).

<sup>3</sup> Stowell (1987a) claims that the structure of a small clause in (i) is (ii):

- (i) I consider *John intelligent*.
- (ii) I consider [<sub>NP</sub>John [<sub>A'</sub> intelligent]]

In this approach, the category of a small clause is the same as that of the predicate and its subject occupies the SPEC-position. The difference between this approach and Chomsky's (1986a) approach is that in the former, the predicate of a small clause is not a maximal projection, but in the latter, it

is. Under this analysis, the possibility of extraction of predicates in small clauses cannot be explained. Consider the following example:

(iii) How intelligent<sub>i</sub> do you consider John t<sub>i</sub> ?

If we assume that only maximal projections can be moved, existence of such examples as (iii) is problematic (cf. Adachi (1985) and Kitagawa (1985)). For one argument against this, see Stowell (1987a).

<sup>4</sup> This principle states that a clause should have a subject.

<sup>5</sup> This example is cited from S-R. Meguro, Tokuo and S-M. Meguro (1985).

<sup>6</sup> The agreement between a subject and its predicate AP in French small clauses seems to be related to the agreement between them in copulative constructions as in (i):

(i) Ils sont méchants.  
'They are hostile'

It is not clear how these kinds of agreement should be treated together. But one possible answer is that the copular verb *sont* in (i) takes a small clause as its complement and the subject *Ils* is moved from the embedded subject position to the higher one, as illustrated in (ii):

(ii) [<sub>IP</sub> Ils<sub>i</sub> sont [<sub>IP</sub> t<sub>i</sub> [<sub>AP</sub> méchants]]]

Since this issue is far beyond the scope of this paper, we will leave it to further research.

<sup>7</sup> The IP-analysis of small clauses is based on the same line of reasoning as the DP-analysis of noun phrases proposed by Takano (1988) and Tonoike (1988), which states that the agreement in noun phrases is also held by INFL.

<sup>8</sup> If a small clause is an IP and its head INFL has agreement features as shown in the French example in the text, it is predicted that the same is true in English small clauses. Consider the following examples;

- (i) a. I consider them students/\*a student.
- b. They consider John \*fools/a fool.

Suppose that there is some agreement between the subjects and the predicate NPs in small clauses in (i). If we adopt the IP-analysis, we can easily explain this fact by saying that the agreement features of an INFL induce these effects. Although I will not go into details about the mechanism of agreement in these phenomena, the IP-analysis seems to provide a plausible way to explain the facts indicated above. (For a similar approach to the agreement phenomenon indicated in (i), see Stowell (1987b)).

<sup>9</sup> Although I assume that Rapoport's judgements of the examples in (22) is right, our approach is different from his. He assumes that a small clause in English has the same structure as that in Chomsky (1986a), Stowell (1981) and others; that is, it is an adjoined structure and its category is the same as that of the predicate.

<sup>10</sup> Chomsky (1986) also incorporates a revised notion of L-marking which is slightly different from ours, to account for some phenomena with respect to ECM constructions and small clauses. But it seems that his explanation is not sufficient, for the following reason. Consider the following abstract structures:

- (i) a. John V [<sub>S</sub> NP *x* ]
- b. John V [<sub>IP</sub> NP to VP]
- (ii) John V [<sub>CP</sub> e [<sub>IP</sub> NP to VP ]

Chomsky claims that in (ia) and (ib), NP is L-marked and therefore, it is not a BC, but in (ii), NP is not L-marked and therefore it is a BC. As for (ii), we can see that his claim is right by considering such examples as (30a) presented here as (iii):

- (iii) ?\*Who do you think that pictures of *t* are on sale?

However, his approach cannot explain the difference between ECM constructions and small clauses with respect to extractability from embedded subjects, because the embedded subjects in both of the constructions would be L-marked. And what is worse, his approach predicts that extraction from the embedded subject of an ECM construction would be possible, contrary to the fact, as seen in (20) and (22). For a detailed discussion, see Chomsky (1986).

<sup>11</sup> Our claim is that in (22b) there are no violations of the Subjacency Condition. Then what makes the sentence marginal? One possible answer is that the marginality is due to the so-called "internal constituent effect" (see Lasnik and Saito (forthcoming)); that is, the sentence involves the movement out of a constituent that is not the right-most branch. I thank Yuji Takano (personal communication) for suggesting this possibility.

<sup>12</sup> We assume that whether a certain head in a language has intrinsic agreement features or not depends not on its lexical realization but on some properties of the language. For example, the head C in Modern Greek seems not to have intrinsic agreement features, although it is lexically realized, as we will see soon below.

<sup>13</sup> Yuji Takano (personal communication) has first suggested that such phenomena as seen in (30) may be related to the paradigm in (22).

<sup>14</sup> In Spanish, a sentence corresponding to the English example in (30b) is perfectly grammatical, as seen in (i):

- (i) [de que autora]<sub>i</sub> no sabes [<sub>CP</sub>[<sub>NP</sub>qué traducciones t<sub>i</sub>] han ganado premios internacionales]

'By what author don't you know what translation have won international awards.'  
(Chomsky (1986a))

In this case, the NP in the SPEC-position of CP is L-marked by the preceding verb *sabes*, as Chomsky claims, just like in the case of English. For more detailed discussion, see Chomsky (1986a) and Torrego (1985).

<sup>15</sup> Even if the clausal subject in (50a) were not a CP, the embedded subject *Workers* could not receive a Case since the clause is topicalized and not governed by INFL (cf. Stowell (1981)).

<sup>16</sup> This condition states that an element is visible for  $\theta$ -marking only if it is assigned Case. For detailed discussion, see Aoun (1979) and Chomsky (1986b).

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Doctoral Program in Literature and Linguistics  
University of Tsukuba